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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/517,127	03/02/2000	Scott E. Moore	MI22-1246	4844

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EXAMINER	
ELEY, TIMOTHY V	

ART UNIT	PAPER NUMBER
3724	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/517,127	MOORE ET AL.	
	Examiner	Art Unit	
	Timothy V. Eley	3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *39,41-48,133-135,165-167,177 and 179-181* is/are allowed.

6)☒ Claim(s) *1-5,10,11,15-20,22-28,31-33,49-51,53-65,67,130,138-144,152-163,168-176 and 178* is/are rejected.

7)☒ Claim(s) *12-14,52,131 and 164* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/3/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-5,10-20,22-28,31-33,39,41-65,67,130,131,133-135,138-144 and 152-181.

DETAILED ACTION

Claim Objections

1. Claims 31, and 143 are objected to because of the following informalities:

- "the sensor"(claim 31, line 1; claim 143, line 9) does not properly refer to the sensor previously recited in claims 27 and 143 respectively, since two sensors are present in the apparatus.

Appropriate correction is required.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-3,10,11,15-17,49-51,53-60,62,139,140,144,152,153,157-162,173,174, and 176 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 137-141,143-150,174,and 175 of copending Application No. 10/931526. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 140,160-162, and 174 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al(5,755,614).

- Adams et al discloses a semiconductor processor system comprising: inherently a process chamber adapted to process at least one semiconductor workpiece using a process fluid; a process fluid system coupled with the process chamber and including: a recirculation system configured to recirculate the process fluid to a homogeneous level; and a sensor coupled with the recirculation system and configured to output a signal indicative of the process fluid; and wherein the sensor is configured to monitor turbidity of the process fluid. See figure 2, column 1, lines 12-14; column 6, lines 58-end to claim 7, lines 1-10, column 7, lines 17-31, and column 7, lines 44-53.

- Regarding claims 160-162, the recirculation system is configured to recirculate the process fluid to a homogeneous level to provide the process fluid having a turbidity within a desired range for application to the process chamber.
- Regarding claim 174, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to monitor the turbidity of the process fluid.

6. Claims 1,15,17,49,63,64,138,141,142,154-156, and 172 are rejected under 35 U.S.C. 102(e) as being anticipated by Obeng et al(6,048,256).

- Obeng et al discloses a semiconductor processor system comprising; inherently a process chamber adapted to process at least one semiconductor workpiece using a process fluid; a connection coupled with the process chamber and configured to receive the process fluid; a sensor coupled with the connection and configured to output a signal indicative of the process fluid; a control system coupled with the sensor and configured to control at least one operation of the semiconductor processor system responsive to the signal; wherein the sensor is configured to monitor turbidity of the process fluid; and wherein the connection is adapted to couple with a process fluid supply and is configured to supply process fluid from the process fluid supply to the process chamber. See figure 1, column 1, lines 28-36, column 2, lines 61-end to column 3, lines 1-5, column 4, lines 57-end to column 5, lines 1-7, and column 5, lines 18-62.

- Regarding claims 15 and 63, the system further comprises a mixing system configured to mix plural components of the process fluid and the control system is configured to control the mixing system.
- Regarding claim 17, the process chamber comprises a process chamber of a chemical-mechanical polishing processor.
- Regarding claim 49, the sensor is inherently coupled with the connection and configured to output a signal indicative of accumulation of particulate matter with the connection, since turbidity measurements inherently measure the amount of particles in a fluid.
- Regarding claims 64,138,142,155, and 156, the system comprises at least one metering device configured to flow one of the components, and the control system is configured to control the metering device to control a flow rate of the component responsive to the system, and the metering device is configured to permit flow of only the component of the process fluid. See column 2, lines 37-40.
- Regarding claim 154, the connection is configured to supply the process fluid to the process chamber.
- Regarding claim 172, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to output the signal indicative of the turbidity of the process

fluid, since turbidity is directly related to the percentage of solids present in a particular fluid.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1,10,11,15,17,27,28,31,33,49-51,53-61,63-65,67,138,139, 141,143,144,152,153,157-159,168-171,173,175,176, and 178 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al in view of Obeng et al(6,048,256).

- Adams et al is explained above.
- Adams et al states that the turbidity sensor is used to control the semiconductor processor system, but does not specifically disclose a control system coupled with the sensor for controlling at least one operation of the semiconductor processor system.
- Obeng et al discloses that it is well known in the art to use a turbidity sensor to control at least one operation of a semiconductor processor system as indicated above.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Adams et al system by providing a control system for

controlling at least one operation of the system as taught by Obeng et al, in order to more efficiently process the semiconductor.

- Regarding claim 10, the sensor is configured to output a signal indicative of accumulation of particulate matter within the connection, since monitoring turbidity is equivalent to indicating accumulation of particulate matter.
- Regarding claim 15, the system further comprises a mixing system configured to mix plural components of the process fluid and the control system as modified is configured to control the mixing system. See column 7, lines 44-53.
- Regarding claims 17,57, and 67, the process chamber comprises a process chamber of a chemical-mechanical polishing processor. See column 1, lines 12-14.
- Regarding claims 27,65, and 143, the system further comprises another sensor. See column 6, lines 58-end.
- Regarding claims 28,61,64, and 138, the system comprises at least one metering device configured to flow one of the components, and the control system as modified is configured to control the metering device to control a flow rate of the component responsive to the system. See column 7, lines 3-7.
- Regarding claims 50 and 51, applicant's broad recitation of horizontal and vertical is met since some part of the connection is horizontal and some part of the sensor is vertical.

- Regarding claims 53,139, and 144, the system further comprises a recirculation system configured to recirculate process fluid within the connection and wherein the control system as modified is configured to control the recirculation system responsive to monitoring the accumulation. See column 7, lines 17-26.
- Regarding claims 55 and 58, the connection comprises a drain connection configured to receive process fluid from the process chamber. See column 7, lines 17-27.
- Regarding claims 152 and 153, gravity inherently will cause the accumulated particulate matter to accumulate within the connection which is arranged to transport the process fluid in a substantially horizontal direction.
- Regarding claims 157-159, the recirculation system is configured to recirculate the process fluid to a homogeneous level to provide the process fluid having a turbidity within a desired range for application to the process chamber.
- Regarding claims 170,171,173,175,176, and 178, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to output the signal indicative of the turbidity of the process fluid, since turbidity is directly related to the percentage of solids present in a particular fluid.

9. Claims 2-4,16,18-20,22-26,32,130, and 163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al in view of Obeng et al, as applied above, and further in view of Simms(3,713,743).

- Adams et al, as modified, is explained above.
- Adams et al does not disclose a connection that comprises a connection of a sampling system configured to provide the process fluid in a substantially static state, nor a storage device configured to store historical data corresponding to the process fluid.
- However, Simms discloses that it is well known in the art to provide a storage device configured to store historical data corresponding to a process fluid, and to provide a sampling system configured to provide the process fluid in a substantially static state. See column 4, lines 42-49, and column 9, lines 9-22.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have further the Adams et al system by providing a connection that comprises a sampling system configured to provide the process fluid in a substantially static state, and a storage device configured to store historical data corresponding to the process fluid, as taught by Simms, in order to make the system more efficient.

- Regarding claims 3,4, and 20, inherently, as modified, the static process fluid must be compared with a signature(or desired amount of turbidity).
- Regarding claim 5, it would have been obvious to one having ordinary skill in the art at the time the invention was made to halt processing within the processing chamber, if the turbidity is out of specification, in order to prevent damage to the semiconductor being processed.
- Regarding claim 22, the sensor is configured to monitor a percentage of solids present within a liquid of the process fluid to output the signal indicative of the turbidity of the process fluid, since turbidity is directly related to the percentage of solids present in a particular fluid.
- Regarding claims 23 and 24, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the system to control the sampling system to draw a sample of process fluid in order to eliminate human intervention and thereby make the system more efficient.

Allowable Subject Matter

10. Claims 39,41-48,133-135,165-167,177, and 179-181 are allowed.

11. Claims 12-14,52,131, and 164 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- The cited prior art discloses systems for supplying process fluid.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy V. Eley whose telephone number is 571-272-4506. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Timothy V Eley
Primary Examiner
Art Unit 3724

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